2004 GALVESTON BAY INVASIVE SPECIES RISK ASSESSMENT
INVASIVE SPECIES SUMMARY
Created by: Environmental Institute of Houston, University of Houston-Clear Lake
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Common Name: Black rat

Latin Name: *Rattus rattus*

Category: Terrestrial Animal

Place of Origin: Native of the Indian sub-continent

Place of Introduction: Unknown

Date of Introduction: 1700's

States Effected: Worldwide distribution

Life History:
"A placental mammal with dependent young….Litter size 3-10 (average 5-8), with frequency of litters dependent on season and food supply. The interval between litters may be as little as 27 days….Gestation 20-22 days. Weaning 21-28 days. Sexual maturity 3-4 months. Total life may not exceed two years." http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

Growth/Size:
"Its body weight is usually between 120 and 160 g but it can exceed 200 g."
http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

Feeding Habits/Diet:
"It will feed on and damage almost any edible thing….Omnivorous generalists, yet can be very selective feeders. Eats both plant and animal matter all year round." http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

"Black rats prey on native birds and bird eggs. Murine typhus has been found in some Florida populations. They can transmit salmonellosis and leptospirosis." http://www.wildflorida.org/critters/exotics/SpeciesNumberResults.asp?SPPNO=80 (Accessed 27 March 2003).

Habitat:
"Ship rats are widespread in forest and woodlands as well as being able to live in and around buildings. A very agile rat, it often frequents the tree tops searching for food and nesting there in bunches of leaves and twigs."
http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

"Central or core urban area, Low density suburban development, areas peripheral to core urban areas, and small towns"
http://www.wildflorida.org/critters/exotics/SpeciesNumberResults.asp?SPPNO=80 (Accessed 27 March 2003).

Attitude/Impacts (aggressive, etc.):
"*Rattus rattus* has directly caused or contributed to the extinction of many species of wildlife including birds, small mammals, reptiles, invertebrates, and plants, especially on islands. Ship rats are omnivorous and capable of eating a wide range of plant and animal foods. These include native snails, beetles, spiders, moths, stick insects and cicadas and the fruit of many different plants (Innes 1990). They also prey on the eggs and young of forest birds (Innes *et al*. 1999). In the recovery programme for the endangered Rarotonga flycatcher or kakerori (*Pomarea dimidiata*), Robertson et al. (1994) identified ship rats as the most important predator affecting the breeding success of this bird. Several cases are known where predation on seabirds can be reliably attributed to ship rats. These include sooty terns in the Seychelles Islands (Feare 1979), Bonin petrels in Hawaii (Grant *et al.* 1981), Galapagos dark-rumped petrels in the Galapagos Islands (Harris 1970), and white-tailed tropicbirds in Bermuda (Gross 1912).

The ship rat is the rat most frequently identified with catastrophic declines of birds on islands. The best documented examples in the Pacific region are Midway Island in the Leeward Islands of Hawaii (Johnson 1945, Fisher and Baldwin 1946), Lord Howe Island (Hindwood 1940, Recher and Clark 1974) and Big South Cape Island, New Zealand (Atkinson and Bell 1973). Atkinson (1977) brought together circumstantial evidence suggesting that ship rats, rather than disease, were responsible for the decline of many species of Hawaiian native birds during the 19th century.

There are few indications of rat-induced declines in native birds on islands nearer the equator (latitude 15°N to 20°S). This zone coincides with the distribution of native land crabs, animals that also prey on birds and their eggs. The long co-existence between land crabs and some island birds may have resulted in the development of behaviours among the birds that gives them a degree of protection against rats. Atkinson (1985) suggested that this might be the reason why rat-induced catastrophes are less apparent within

the equatorial zone, but this hypothesis has never been tested." http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)
"This species has been nominated as among 100 of the "World's Worst" invaders"
http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

Physical Description:
1. "A slender rat with large hairless ears, it may be grey-brown on the back with either a similarly coloured or creamish-white belly, or it may be black all over. The uniformly-coloured tail is always longer than the head and body length combined."
http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

Management Recommendations / Control Strategies: include references for existing site-specific strategies
"*Rattus rattus* can be eradicated from small areas or seasonally controlled using proprietary rat poison products in an appropriate manner.

"'Second-generation' anticoagulant poisons are used widely for ship rat control, but possible consequences of any ongoing control should always be considered. These consequences include primary or secondary poisoning of species we are aiming to protect or other non-target species, secondary poisoning of other vertebrate pests such as cats, and development of resistance to these poisons by ship rats. It is not known whether their tree-climbing habits will make eradication more difficult" (Source: SPREP)."
http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)

References (includes journals, agency/university reports, and internet links):

1. ISSG - http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts=
2. FWC - http://www.wildflorida.org/critters/exotics/SpeciesNumberResults.asp?SPPNO=80

Notes:
"Ship rats can be widespread, utilizing most habitat types, but they show a preference for drier habitats. They generally avoid swimming." http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts= (Accessed 27 March 2003)